

REMARKS

The application was filed on 05 December 2001 with twenty-one claims. The Examiner examined the application and on 09 September 2005 issued a first Action rejecting claims 1-10 and 12 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0067934 A1 entitled MULTIPROTOCOL DECAPSULATION/ENCAPSULATION CONTROL STRUCTURE AND PACKET PROTOCOL CONVERSION METHOD to Hooper et al. (Hooper '934). The Examiner further rejected claim 11 under 35 U.S.C. §103(a) as being unpatentable over Hooper '934 and U.S. Patent No. 6,754,662 entitled METHOD AND APPARATUS FOR FAST AND CONSISTENT PACKET CLASSIFICATION VIA EFFICIENT HASH-CACHING to Li (Li '662). The Examiner also rejected claims 13-21 under 35 U.S.C. §103(a) as being unpatentable over Hooper '934 and U.S. Patent Application Publication No. 2002/0027901 A1 entitled APPARATUS, METHODS AND SYSTEMS FOR ANONYMOUS COMMUNICATION to Liu (Liu '901).

Applicants respond. Applicants amend independent claims, cancel claims 20 and 21. Claims 1-19 are pending.

In amending the claims, Applicants have not added new matter. Support in the originally filed specification for "transferring the portion of the network data that are not modified to a next memory subsystem of the next processing element destination" is given on page 15, lines 5-8. Support in the originally filed specification for transferring the unmodified portion of the network data independent of transferring the modified portion of the network data is given on page 15, lines 5-8 and lines 25-27 and on page 16, lines 16-18.

The Rejection of claims 1-19 under 35 U.S.C. §§102(e) and 103(a) by Hooper '934

The Examiner rejected claims 1-10 and 12 under 35 U.S.C. §102(e) as being anticipated by Hooper '934; claim 11 under 35 U.S.C. §103(a) as being unpatentable over Hooper '934 and Li '662; and claims 13-21 under 35 U.S.C. §103(a) as being unpatentable over Hooper '934 and Liu '901. Applicants respond to the rejection of all the claims based on Hooper '934 as the primary rejecting

reference. Applicants have further reviewed Li '662 and Liu '901 and have determined that their combination with Hooper '934 does not correct the deficiencies of Hooper '934.

Hooper '934 teaches a method and apparatus of modifying packets in a data processing network. A packet arrives into the apparatus of Hooper '934 which will separate the header of the packet from the body of the packet as described by the Examiner. The header of the packet is stored in SRAM of the processing element and the body or payload of the packet may be stored in a SDRAM of the processing element with additional space for a modified header. The main thrust of Hooper '934 is modification of the header of packet by encapsulating/decapsulating bytes according to flags which are determined by changing the communication protocol of the packet.

The Examiner asserts and Applicants respectfully traverse the assertion that Hooper '934 teaches the claimed elements of "writing back the modified portion of the network data to the next processing element destination independently of transferring the nonmodifiable portion of the network data, and bypassing the local memory" as in independent claim 1; of "forward[ing] the updated modifiable portion of the data packet to the bus interface that transfers the updated modifiable portion of the data packet to the interconnect fabric, independent of the portion of the data packet that need not be modified, to the next processing element system", as in independent claim 12; and "means to forward the modified portion of data directly to the next memory of the destination means bypassing storing the modified portion in the memory associated with the means to modify the modifiable portion of the received data" as in independent claim 15.

The Examiner asserts that Hooper '934 teaches the claimed elements and refers to Hooper '934 at 0047, lines 12-17, page 4. Hooper '934 teaches forwarding the header of a packet to the microengine where it can be modified. After modification (Hooper '934 at 0047, second half), the microengine will then "classify and forward the packet in a conventional manner. That is, the 'no' condition

indicates that the process can classify and forward. Forwarding the header can have the microengine take the header and send it to the processor or elsewhere, so that it can get reassembled with the payload. Forwarding the header could also involve forwarding the packet, etc.” Respectfully, Hooper ‘934 does not send the payload and the header to the next processing element independent of each other, as in the amended claims, or that the modified header bypasses memory before being forwarded to its destination.

Applicants wish to particularly point and distinctly emphasize three differences between Hooper ‘934 and the claimed invention. First, Hooper ‘934 says that it forwards the packet “in a conventional manner.” Prior to Applicants’ teachings, the conventional manner for packet forwarding is for the header and payload to be transmitted together across the interconnect fabric. Hooper ‘934 does not teach or suggest otherwise.

The second literal and nonobvious difference between Hooper ‘934 and Applicants’ invention as in the amended claims is that the purpose of the microengine in Hooper ‘934 for forwarding the header is so it can “get reassembled with the payload”; reassembly of the packet, i.e., the payload and the header, must take place in DRAM or in the processor. Applicants teach that the header and the payload do not have to be reassembled before transmission of one or the other across the interconnect fabric. Hooper ‘934 nowhere discusses or suggests that the header and the payload be separately transferred outside the processor, i.e., across an interconnect fabric, to a next processing element destination and its associated memories, but rather teaches reassembly in the processor or in its memory.

A third literal and nonobvious different between Hooper ‘934 and Applicants’ claimed invention is that the modified portion of Hooper ‘934 does not bypass local memory before being forwarded to the next destination. The non-modifiable portion of the packet, the payload of Hooper ‘934, is stored in SDRAM (see Hooper ‘934 at Figure 4). Hooper ‘934 explicitly states that the payload and modified header are recombined before forwarding to the next destination. Thus,

the modified header portion must be recombined with the payload in the DRAM (SDRAM?) and therefore does NOT bypass local memory before transferring to the next destination. Hooper '934 states that the "microengine will copy the payload portion of the packet to DRAM [SDRAM?] and may place the packet at an offset in the buffer to make room for any new header that could be prepended to the packet for packet forwarding." (Hooper '934 at 0046, lines 5-9).

So, contrary to the Examiner's assertions, Hooper '934 explicitly teaches sending the modified portion of the packet (the header) back to memory before the packet gets transferred, and does not teach the claimed element of bypassing local memory. Also, contrary to the amended claims, Hooper '934 does not teach forwarding the nonmodified portion (the payload) to the next processing element system independent of the modified portion (the header).

Respectfully, a hash caching policy of Li '662 does not complete the teachings of Hooper '934 to render Applicants claim 11 as obvious because neither Li '662 nor Hooper '934 teach the claimed limitation of independently transferring the modified and non-modified portions of a packet; nor do they teach that the modified portion bypasses the local memory before transferring to the next destination.

Similarly, a description of the variety of data types and protocols as taught by Liu '901 does not render Applicants' claims 13-19 as obvious because neither Liu '902 nor Hooper '934 teach the claimed limitation of independently transferring the modified and non-modified portions of a packet; nor do they teach the modified portion bypassing the local memory before transferring to the next destination.

Conclusion

Applicants distinguish the claimed invention from Hooper '934 by showing that Hooper '934 does not teach the claimed elements of a modified header bypassing local memory before being transferred to a destination next processing element; nor does Hooper '934 teach the claimed elements of transferring the non-

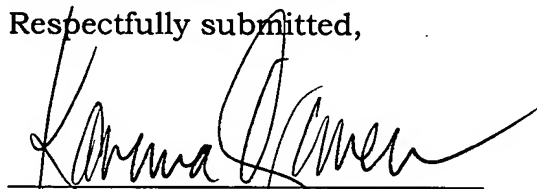
modified portion (the body or payload) of a data packet to the next processing element destination independent of transferring the modified portion (the header) of a data packet to the next processing element destination. Thus, Applicants' have successfully traversed the Examiner's rejection of Applicants' claims 1-10 and 12 as being anticipated by Hooper '934 under 35 U.S.C. §102(e). Further the combination of Li '662 or Liu '902 with Hooper '934 does not provide the requisite teachings or suggestions to render Applicants' claimed invention of claims 11, 13-19 as obvious under 35 U.S.C. §103(a) in light of the shortcomings of Hooper '934.

Attorney for Applicants thank the Examiner for her/his review of the specification, the figures, and the claims. Having reviewed the art submitted by the Examiner, Attorney for Applicants requests the Examiner to allow all claims. The Examiner is further invited to telephone the Attorney listed below if she/he thinks it would expedite the prosecution and the issuance of the patent.

Respectfully submitted,

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